

# *Polydactyly of the Foot*

## **Clinical history**

A 38-year old female patient presented to the emergency department with pain after twisting her left foot. Findings at clinical examination included presence of a polydactyl foot with local tenderness and ecchymosis of the supernumerary toe. The additional toe is positioned on the dorsum of the foot between the fourth and fifth toe. The imaging workup included plain radiographs of the foot to exclude fracture or dislocation.

## **Findings on medical imaging**

Conventional anteroposterior radiograph (Fig. 1.) shows six digits, each one articulating with its own metatarsal bone. The extra digit is positioned in the fourth interdigital area and consists of a hypoplastic duplication of the metatarsal and the phalanges. The other metatarsals show a normal shape and articulations. The tarsal bones appear unremarkable. The distal interphalangeal joint of the supernumerary toe shows synostosis, as well as the distal interphalangeal joint of the fifth toe. No fracture or (sub)luxation is observed.

Fig. 1.

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The radiographic findings in this patient are compatible with a *metatarsal type postaxial polydactyly of the foot with fifth ray duplication*.

### **Comment**

Polydactyly of the foot is a condition in which there are extra digits. It is generally classified into three major groups based on topographic criteria: medial ray (preaxial), central ray and lateral ray (postaxial) polydactyly. The lateral ray polydactyly is divided into fifth ray duplication and sixth ray duplication, depending on medial or lateral position of the supernumerary toe relative to the little toe. Each ray can be further divided according to the level of duplication, i.e. metatarsal type, proximal-, middle- and distal-phalangeal type. The metatarsal type often shows a hypoplastic metatarsal and proximal phalanx. The complexity of the deformity ranges from a simple soft-tissue problem to a completely developed accessory ray. It is not uncommon for an extradigit to be fused in some way to the neighbouring digits (webbing between the digits or osseous fusions), a condition called polysyndactyly.

Polydactyly of the foot is one of the most common congenital foot anomalies. Although the frequency varies widely among populations, a slightly higher incidence is seen in Africa and Asia. Polydactyly of the foot occurs in approximately 2-3 newborns out of 1000 live births. The condition is considered to be isolated and idiopathic in most cases, but in approximately 15% associated anomalies can be found. A positive family history is found in 10 to 30% of the cases. The deformity is bilateral in 25 to 50%. Adult cases are more rare because most individuals are treated during childhood.

Watanabe et al. reported in 1992 a series of 330 feet in 265 patients. Lateral ray polydactyly occurred in 86% of the cases, far more frequent than medial ray (8%) and central ray (6%) polydactyly. 173 patients in their series had fifth ray duplication (i.e. 76% of the lateral ray polydactylyes). Only 10 of these patients had the complete metatarsal duplication type. (i.e. 5.7% of fifth ray duplications and 3.8% of all polydactylyes).

Treatment of polydactyly may be indicated for shoe problems, pain or cosmetic reasons. Surgery can be performed at any age but is generally done before walking age, when the infant is between 9 and 12 months of age. In most cases the surgical procedure causes no difficulties and prognosis is excellent without complications.

### **Key word**

Polydactyly

### **References**

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